de maximis, inc.

450 Montbrook Lane
Knoxville, TN 37919
865-691-5052 phone
865-691-6485 fax

September 24, 2010

Owen Thompson
U.S. EPA Region 5
77 W. Jackson Blvd.
Chicago, IL 60604-3507

Subject: Detrex / URS Sediment and DNAPL Delineation Report

Dear Mr. Thompson:

Attached please find comments from the Fields Brook Action Group (FBAG) regarding the Detrex / URS DNAPL Delineation Report which was previously submitted to USEPA in May 2010 by Detrex. Since the remediation of the Sediment Operable Unit and the Floodplain / Wetland Area (OU-1 and OU-4) of the Fields Brook Superfund Site, the FBAG has consistently asserted that certain Source Control failures have and will continue to impact the Brook in Exposure Units 8 and 6. Several investigations have been performed by the FBAG and subsequently by Detrex that indicate the presence of Chlorinated Solvent DNAPL outside of the current Source Control area. The FBAG believes that the continued failure of Source Control activities present a significant risk and may jeopardize the remediation of the Brook that have occurred over several years. The conclusions included in this transmittal indicate that Source Control activities still are not adequate to protect the Brook.

We have discussed this several times with the previous USEPA Remedial Project Managers and Regional Counsel. To that end, we would like to schedule a meeting with representatives of USEPA and its contractors. We would be available for a meeting in Chicago to discuss the pertinent historical information, conceptual site model that has been developed by FBAG and the current comments to the delineation report. Please review the attached information and I will contact you to schedule the meeting.

In the interim, if you have any questions, please contact me.

Sincerely,

Robert W. Rule
Project Coordinator

Cc: FBAG PMC
Bob Currie (Detrex)
Manu Sharma (Gradient)

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Gradient

September 21, 2010

Owen Thompson
U.S. EPA Region 5
77 W. Jackson Blvd.
Chicago, IL 60604-3507

Subject: Comments on URS Sediment and DNAPL Delineation Report

Dear Mr. Thompson:

On the behalf of Fields Brook Action Group (FBAG), Gradient has reviewed the Sediment and DNAPL Delineation Report prepared by URS for the Detrex property (URS, 2010[1]). This letter provides a summary of our review comments.

The URS work did not adequately remediate DNAPL-affected sediments within the DS Tributary and did not fully investigate the transport mechanisms from the Detrex facility that have resulted in DNAPL migration in multiple directions from the Detrex source area. However, the investigation has confirmed the continued presence of a significant source of DNAPL on the Detrex facility and reaffirmed the FBAG Conceptual Site Model of DNAPL migration towards Field Brook, previously presented to USEPA (Gradient, 2009[2]). FBAG remains concerned about the threat to Fields Brook and urges USEPA to have more aggressive source control measures implemented immediately on the Detrex facility. The remainder of this letter presents additional details on our review of the URS report.

1. The remediation undertaken in the DS Tributary, although a much needed action, was poorly executed, is inadequate, and did not completely remove DNAPL from the creek sediments.

- During the investigation, DNAPL was reportedly observed in sediment samples DS-2 and trenches TT1 and TT2. In addition, sediment analytical results for key VOCs and SVOCs exceeded the saturation values (C_{sat}) in 9 of the 10 sediment samples (Table 1) – a USEPA (1996[3]) approved metric, indicative of the presence of DNAPL. The exceedances of C_{sat} values and the continued observation of DNAPL in the upstream section of the tributary, where DNAPL was absent during the 2001 remediation, is a clear indication of continued DNAPL migration from the Detrex property.
- The sediment removal undertaken at the DS Tributary did not remove all the DNAPL-affected sediment identified during the investigation. Although the exploratory test trenches where DNAPL was observed (TT1 and TT2) were advanced to a depth of 6 feet, only the top 2 feet of sediment was removed. Thus, DNAPL impacted sediments were potentially left in-place at depth. This is corroborated by the results of the post-excavation confirmatory samples that showed concentrations of VOCs and SVOCs in exceedance of their respective C_{sat} values (Table 1), indicative of residual DNAPL.

[1] URS. 2010. "Sediment and DNAPL Delineation Report, Detrex Facility, Detrex Source Control Area, Fields Brook Superfund Site, Ashtabula, Ohio." May.
[2] Gradient. 2009. "Assessment of the Detrex Source Control Remedy and DNAPL Migration Pathways to Fields Brook, Fields Brook Superfund Site, Ashtabula, OH." December.
[3] United States Environmental Protection Agency (USEPA). 1996. Soil Screening Guidance: Technical Document. May.

- Water quality results for samples collected from the DNAPL interceptor trenches (TT-1 and TT-2), three months after sediment removal, are also indicative of the continued (post-remediation) presence of DNAPL within the DS Tributary. Concentrations in the samples collected from TT-1 and TT-2 (VOCs up to 14 mg/l) exceed the effective solubility limits for several constituents and are consistent with or higher than concentrations previously detected in the North Sewer sump, where Detrex DNAPL seeps had been repeatedly observed (Table 2).

Thus, given that the URS excavation work did not effectively remediate the impacted sediments, they continue to pose a threat to sediment and surface water quality in Fields Brook.

2. The investigation results confirm that the Detrex Facility continues to serve as a significant source of DNAPL with several feet of DNAPL present in monitoring wells and widespread detection of elevated soil and groundwater concentrations.

- DNAPL was visually observed or suspected in soil borings advanced over a large area (~12.5 acres) and over a significant depth interval at the Detrex Facility. Out of the 14 soil borings that were to be advanced as part of the URS investigation, DNAPL was observed or suspected in 8 borings[4], with elevated PID readings, consistent with DNAPL presence found in these borings (Figure 1). DNAPL was detected in these soil borings (for e.g., DPT-7) at depths ranging from 5 to 21 feet below ground surface (bgs), thus indicating the presence of DNAPL over a broad depth horizon.
- Soil concentrations measured at the Detrex facility are indicative of mobile DNAPL – material that can migrate through fractured clay. Gradient (2009) had previously calculated a total VOC soil threshold concentration (C_{mobile}), which if exceeded indicates a potential for DNAPL to migrate through fractured clay. A comparison of the soil analytical results reported in this study to the C_{mobile} soil concentration benchmark (total VOCs - 13 mg/kg) confirms the continued presence of mobile DNAPL at the Detrex Facility (Figure 1; Table 3).
- In addition, the URS on-site investigation found over 2 feet of DNAPL in monitoring wells and piezometers (MW-10S and DPT-7) in the former lagoon area. Significant amounts of pooled DNAPL have also been historically detected in source area monitoring wells MW-7S and MW-5S, although these wells were not monitored during the recent DNAPL delineation study. In addition, extremely high groundwater concentrations (on the order of 50 mg/l) were recorded at monitoring wells (MW-4S and MW-10S) near the former Detrex lagoons.

Thus, the DNAPL plume on the Detrex property extends over a large area and depth horizon, and continues to provide a large driving head for outward DNAPL migration.

3. Detrex has not undertaken the necessary steps to modify the design of their ineffective source remediation system and has not collected the data needed to assess the performance of their migration control systems.

FBAG had previously raised several concerns regarding the poor design and implementation of the source control and migration control elements of the Detrex remedy (Gradient, 2009). Specifically, our analysis indicates that the Detrex source remedy were improperly designed, under sized, and

[4] Note, due to the known presence of DNAPL and associated health and safety concerns, 3 of the soil borings proposed in the URS Work Plan were not completed during the investigation. Of the soil borings that were advanced during the investigation, DNAPL was reportedly observed in 5 borings.

only intermittently operated. Additionally, components of the remediation system, such as the slurry wall and groundwater collection trench, were not installed or operated consistent with requirements of the Source Control ROD (Gradient, 2009). In addition, Detrex is not collecting appropriate data (groundwater elevation, flow rates, *etc.*) needed to assess the effectiveness of the migration control elements of the remedy (*i.e.*, the slurry wall and the collection trench along the section of the DS Tributary located on the Detrex Facility) [Gradient, 2009].

Despite FBAG's repeated appeals (Sharma, 2009[5]; Gradient, 2009), Detrex has not taken any actions to enhance DNAPL removal at the former lagoon area and/or to collect the data needed to assess the effectiveness of the migration control elements of the remedy. The failure of these remedial measures to effectively mitigate DNAPL migration has resulted in deteriorating conditions in sections of DS Tributary and continues to threaten Fields Brook.

4. Detrex has not adequately assessed migration of DNAPL *via* underground utilities or other transport mechanisms.

Based on prior data, FBAG had developed a Conceptual Site Model of DNAPL migration towards Fields Brook *via* the DS Tributary, underground utilities that run parallel to State Road, and geologic features. Detrex's evaluation has not adequately assessed these migration mechanisms:

- *DS Tributary:* Prior sampling and the recent URS investigation have encountered soil concentrations indicative of mobile DNAPL (C_{mobile} exceedances) near the uncontained (or unlined) section of the DS Tributary on the Detrex facility (see DPT-7, DETSB-20 and DPT-13; Figure 1). Consequently, DNAPL could easily enter this section of the DS Tributary, migrate *via* the culvert and flow into stream sediments west of State Road, where DNAPL and C_{sat} exceedances have been repeatedly observed since 2005, and again during the URS sediment investigation.

  The detection of elevated VOC concentrations, in excess of $C_{sat,}$ and visual DNAPL observations in the DS Tibutary during the URS investigation in previously unaffected areas (prior to the 2001 remediation) is clear indication that DNAPL has recently migrated into the DS Tributary. The URS report fails to address the source and/or mechanisms for the detected contamination and does not propose any measures to prevent future contamination.

- *Underground Utilities:* Prior investigations had encountered elevated soil/sediment concentrations indicative of mobile DNAPL overlying utilities (*e.g.* the North Sewer, CEI conduit, and water line) (see Figures 3 and 5b, Gradient, 2009). Mobile DNAPL from such sources could migrate downward, readily enter the utilities, and migrate *via* gravity towards Fields Brook. This was confirmed by the large volumes of contaminated groundwater and DNAPL that were observed flowing out of these utility lines at Fields Brook during the State Road Bridge construction work.

  Although these utilities have been identified as potential conduits for DNAPL migration (USEPA, 2009[6], Gradient, 2009), URS chose to collect soil samples at only one location along the entire length of the water and electrical lines. Further, it is not clear how URS was able to access materials below the utility line. Overall, the collection of samples below the utility lines at only one location does not serve

[5] Sharma, M. [Gradient]. 2009. Letter to Evison, L (United States Environmental Protection Agency) re: Detrex's Proposed Source Control Enhancements, Fields Brook Superfund Site, Ashtabula, Ohio. July 15.
[6] United States Environmental Protection Agency Region 5 (USEPA). 2009. Second Five-Year Review Report for Fields Brook Site, Ashtabula, Ohio. June.

to adequately investigate the migration of DNAPL *via* these pathways, especially given the numerous prior observations of DNAPL associated with the utilities.

- *Geological Features:* Although the DS Tributary and utilities are the significant DNAPL migration pathways between the Detrex source area and Fields Brook, transport *via* geological features, such as the lacustrine clay surface, sand seams and clay fractures, also facilitate DNAPL migration at the Site.

  The URS transport analysis *via* geologic features is flawed and misleading. The URS analysis presents a map of the glacial till's surface. However, the slope of the glacial till surface is irrelevant since DNAPL migration predominantly occurs on the surface of and *via* seams/fractures within the overlying lacustrine clay unit, which slopes from the Detrex property towards Fields Brook (see Figure 8; Gradient, 2009).

Overall, the URS Sediment and DNAPL Delineation Report has several deficiencies, but has nonetheless confirmed the presence of a significant amount of DNAPL at the Detrex facility and reaffirmed FGAB's Conceptual Site Model of DNAPL migration to Fields Brook. These findings highlight the urgent need for more effective management of the source area and elimination of the migration pathways.

Please feel free to call if you have questions or need additional information.

Yours truly,

GRADIENT CORPORATION

Manu Sharma, P.E.
Principal

Table 1
Summary of DS Tributary Sediment Sampling Results (November 2009)
Fields Brook Superfund Site, Ashtabula, Ohio

Sample ID (Sample Depth)		DS Tributary Sediment Samples								
Compounds	**C_{sat} (mg/kg)**	**DS-4 (0-1)'**	**DS-10 (Dup) (0-1)'**	**DS-12 (0-1)'**	**DS-15 (0-1)'**	**DS-16 (0-1)'**	**DS-20 (0-1)'**	**DS-22 (0-1)'**	**DS-28 (0-1)'**	**DS-30 (0-1)'**
VOCs (mg/kg)										
1,2-Dichloroethene (Total)	2.3	ND	ND	0.63	ND	ND	ND	ND	ND	ND
Trichloroethene	139	ND	ND	8.3	**631**	1.7	ND	1.3	ND	ND
Tetrachloroethene	2.8	ND	**8.4**	**7.5**	**152**	**4.5**	ND	**6.5**	1.6	ND
1,1,2,2-Tetrachloroethane	223	ND	ND	5.6	40	ND	ND	ND	ND	ND
Total Chlorinated VOCs *		ND	8.4	22	823	6.2	0.0	7.7	1.6	0.0
SVOCs (mgkg)										
Hexachlorobenzene	0.003	ND	**52**	**20**	**12**	**35**	**12**	**27**	**9.4**	ND
Hexachlorobutadiene	1.0	**60**	ND	**4.0**	**388**	ND	**3.2**	ND	ND	ND

Sample ID (Sample Depth)		DS Tributary Test Trench Samples				
Compounds	**C_{sat} (mg/kg)**	**TT-1: W-2 (2-3)'**	**TT-1: B-1 (5-6)'**	**TT-2: B-4 (7-8)'**	**TT-2: E-1 (4-5)'**	**TT-2: N-1 (5-6)'**
VOCs (mg/kg)						
1,2-Dichloroethene (Total)	2.3	ND	**5.8**	ND	ND	**24**
Trichloroethene	139	**389**	**1,260**	**319**	**202**	99
Tetrachloroethene	2.8	**557**	**1,090**	**821**	**288**	**126**
1,1,2,2-Tetrachloroethane	223	**585**	185	73	195	130
Total Chlorinated VOCs *		1,531	2,541	1,213	685	379
SVOCs (mgkg)						
Hexachlorobenzene	0.003	**24**	**25**	**6.2**	**4.0**	ND
Hexachlorobutadiene	1.0	**17**	**14**	**6.9**	**5.7**	ND

Sample ID (Sample Depth)		DS Tributary Post-Excavation Confirmatory Samples														
Compounds	**C_{sat} (mg/kg)**	**EX-1 (0-1)'**	**EX-3 (0 - 1)'**	**EX-4 (0 - 1)'**	**EX-5 (0 - 1)'**	**EX-6 (0 - 1)'**	**EX-7 (2-3)'**	**EX-8 (1-2)'**	**EX-9 (1-2)'**	**EX-10 (1-2)'**	**EX-10 (Dup) (1-2)'**	**EX-11 (1-2)'**	**EX-12 (1-2)'**	**EX-13 (1-2)'**	**EX-14 (1-2)'**	**EX-15 (1-2)'**	**EX-16 (1-2)'**
VOCs (mg/kg)																	
1,2-Dichloroethene (Total)	2.3	**9.3**	**8.2**	2.0	**27**	**11**	**739**	ND	ND	ND	ND	ND	**6.3**	**2.7**	**9.2**	**14**	**9.3**
Trichloroethene	139	72	98	ND	**183**	**341**	**201**	**291**	**182**	**151**	**280**	**237**	91	18	25	**145**	12
Tetrachloroethene	2.8	**73**	**64**	ND	**51**	**564**	**201**	**250**	**138**	**155**	**188**	**144**	**189**	**43**	**60**	**76**	**10**
1,1,2,2-Tetrachloroethane	223	61	14	ND	54	**333**	173	**352**	123	155	35	36	105	4.2	5.1	63	3.9
Total Chlorinated VOCs *		216	185	2.0	315	1,249	1,314	893	443	461	503	417	391	67	99	298	35
SVOCs (mgkg)																	
Hexachlorobenzene	0.003	**12**	ND	ND	**1.5**	**11**	ND	**54**	**46**	**8.0**	**2.5**	ND	**3.6**	ND	**0.42**	**10**	**0.68**
Hexachlorobutadiene	1.0	**12**	ND	ND	**2.4**	**4.1**	**31**	**67**	**57**	**5.6**	**7.3**	**3.6**	**1.1**	ND	**1.9**	**14.5**	**1.2**

Source:
URS. 2010. "Sediment and DNAPL Delineation Report, Detrex Facility, Detrex Source Control Area, Fields Brook Superfund Site, Ashtabula, Ohio." May.

Notes:
*Data in **bold red** indicate C_{sat} exceedances.*
ND/U - Non-detect.
J - Lab Estimated Value.
** - Only the select VOCs listed above were included in the Total Chlorinated VOC calculation.*

Table 2
Comparison of DS Tributary Trench Water *vs* North Sewer Sump Water Sampling Results
Fields Brook Superfund Site, Ashtabula, Ohio

Compound	DS Tributary East Trench (March 2010)	DS Tributary West Trench (March 2010)	North Sewer (2007/2008)[1]
VOCs (µg/L)			
1,1 ,2,2-Tetrachloroethane	30.2	10.7	41.8
1,1,2-Trichloroethane	4,560	2.5	4.7
1,1-Dichloroethene	631	9,040	ND
Chloroform	278	2,070	0.5
Chloromethane	ND	502	ND
cis-1,2-Dichloroethene	35.4	14,000	75
Tetrachloroathene	6.7	2.05	34.4
Trans-1,2-Dichloroethene	1,950	10,600	ND
Trichloroethene	31.5	18.3	704.4
Vinyl Chloride	890	10,800	ND
SVOCs (µg/L)			
Butyl benzyl phthalate	ND	34.2	ND

Notes:

ND - Non-detect

1) Average contaminant concentrations in North Sewer sump water were calculated using anaytical data collected in 2007 and 2008.

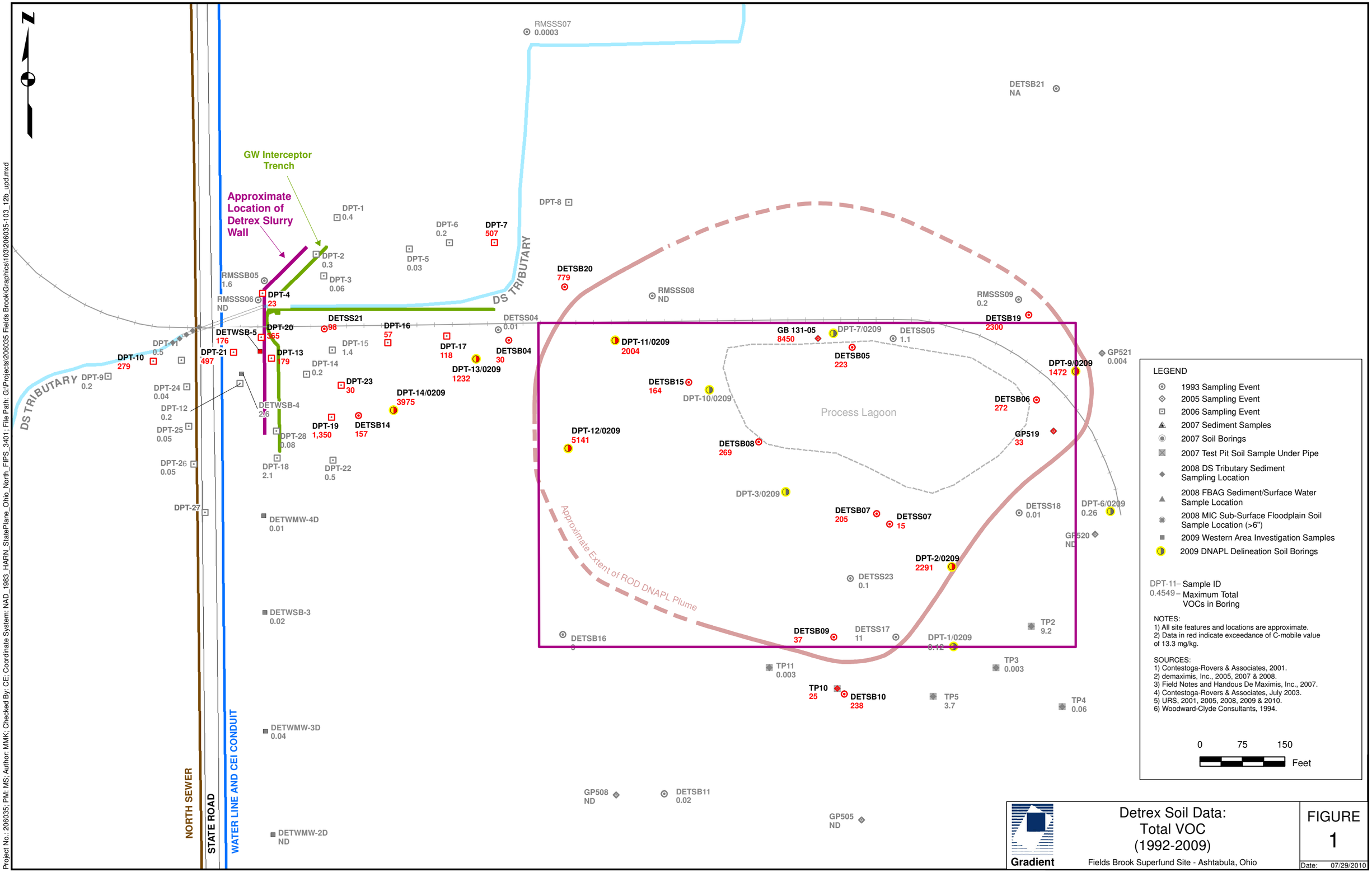
Table 3
Summary of Delineation Borings Soil Data, Detrex Corporation
Fields Brook Superfund Site, Ashtabula, Ohio

Sample ID (Sample Depth)		DPT-1/0209 (5-6)'	DPT-1/0209 (8-10)'	DPT-2/0209 (5-6)'	DPT-2/0209 (10-12)'	DPT-6/0209 (12-14)'	DPT-6/0209 (14-15)'	DPT-9 (6-8)'	DPT-9/0209 (8-10)'	DPT-9/0209 (22-24)'	DPT-11 (8-10)'	DPT-11 (10-12)'
Compounds	**C_{mobile} (mg/kg)**	**11/20/2009**	**11/20/2009**	**11/20/2009**	**11/20/2009**	**11/23/2009**	**11/23/2009**	**11/24/2009**	**11/24/2009**	**11/24/2009**	**11/24/2009**	**11/24/2009**
VOCs (mg/kg)												
1,1 ,2,2-Tetrachloroethane		ND	ND	367	ND	0.0116	ND	ND	ND	ND	363	230
1,1,2-Trichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	75.5	ND
1,1-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane		ND	0.11	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone		ND	0.00585	ND	ND	0.204	ND	ND	ND	ND	ND	ND
Carbon Disulfide		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene		ND	ND	ND	ND	ND	ND	ND	ND	ND	9.05	ND
Tetrachloroathene		ND	ND	117	521	ND	ND	ND	252	ND	723	37.9
Toluene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,2-Dichloroethene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene		0.0188	ND	738	1770	0.0421	ND	175	1220	0.00607	833	311
Vinyl Chloride		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total VOCs	13.3	0.019	0.12	**1,222**	**2,291**	0.26	ND	**175**	**1,472**	0.0061	**2,004**	**579**

Sample ID (Sample Depth)		DPT-11 (Dup) (10-12)'	DPT-11/0209 (20-22)'	DPT-12/0209 (8-10)'	DPT-12/0209 (16-18)'	DPT-13/0209 (13-15)'	DPT-13/0209 (21-23)'	DPT-14/0209 (9-11)'	DPT-14/0209 (21-23)'	DPT-14/0209 (23-25)'
Compounds	**C_{mobile} (mg/kg)**	**11/24/2009**	**11/24/2009**	**12/11/2009**	**12/11/2009**	**12/11/2009**	**12/11/2009**	**12/10/2009**	**12/10/2009**	**12/10/2009**
VOCs (mg/kg)										
1,1 ,2,2-Tetrachloroethane		543	0.0357	ND	ND	ND	0.0051	918	ND	ND
1,1,2-Trichloroethane		20.8	ND	101	23.5	ND	0.064	44	ND	ND
1,1-Dichloroethane		ND	ND	ND	ND	ND	0.0092	ND	ND	ND
1,1-Dichloroethene		ND	ND	ND	6.71	ND	0.0673	ND	ND	ND
1,2-Dichloroethane		ND	ND	ND	ND	ND	0.279	ND	ND	ND
1,2-Dichloropropane		ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone		ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide		ND	ND	ND	ND	ND	0.0168	ND	ND	ND
cis-1,2-Dichloroethene		7.83	ND	ND	5.53	41.3	0.474	72.5	ND	ND
Tetrachloroathene		171	0.0122	2270	53.8	50.8	0.465	570	ND	ND
Toluene		ND	0.0104	ND	ND	ND	0.00422	ND	ND	ND
Trans-1,2-Dichloroethene		ND	ND	ND	ND	ND	0.248	ND	ND	ND
Trichloroethene		927	0.0844	2270	366	1140	2.89	2370	ND	ND
Vinyl Chloride		ND	ND	ND	7.1	ND	2.17	ND	ND	ND
Total VOCs	13.3	**1,670**	0.14	**5141**	**463**	**1,232**	6.7	**3,975**	ND	ND

Source:
URS. 2010. "Sediment and DNAPL Delineation Report, Detrex Facility, Detrex Source Control Area, Fields Brook Superfund Site, Ashtabula, Ohio." May.

Notes:
*Data in **bold red** indicate C_{mobile} exceedances.*
ND/U - Non-detect.
J - Lab Estimated Value.



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Gradient

Detrex Soil Data: Total VOC (1992-2009)

Fields Brook Superfund Site - Ashtabula, Ohio

FIGURE 1

Date: 07/29/2010